

Application No.: 10/643,164

Docket No.: 102323-0130

REMARKS

This is filed in response to the Second Final Office Action mailed July 12, 2005, in the above-cited matter. Claim 50, already indicated as allowable, is placed in independent form. Claims 47 and 51 are amended for matters of form. In the remarks that follow, those and the other remaining claims are shown to be patentably distinct from the cited art. Allowance is therefore requested.

At the outset, the Applicant and the undersigned thank the Examiner for the courtesy extended in conducting the interview that resulted in removal of the Jaber reference. As noted then, and repeated now, not only is the claimed subject matter entitled to an earlier filing date than Jaber, but that publication fails to teach or suggest the claimed invention.

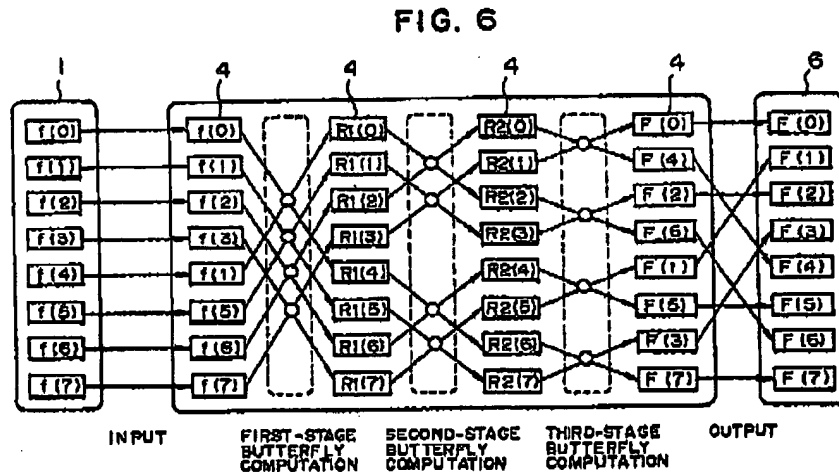
Moving to the present rejection, the Examiner asserts that pending claim 47 is anticipated by Kozaki, U.S. Patent 6,058,409. Not so!

Contrary to claim 47, Kozaki fails to teach a system for performing an FFT that includes, among other things, a final stage that includes "means performing two sets of butterfly calculations, . . . storing butterfly calculation outputs from a first one of the two sets of butterfly calculations in shuffled order in place of the inputs selected for a second one of the two sets of butterfly calculations and storing butterfly calculation outputs from the second one of the two sets of butterfly calculations in shuffled order in place of the inputs selected for the first one of the two sets of butterfly calculations to result in a correct ordering of transform outputs."

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The Applicant reprints below Kozaki's Figure 6. This is the drawing that the Examiner relied on for his rejection:



Kozaki's butterfly stages are illustrated by the dashed boxes with circles and crossing lines. That is the classic notation: the circles are thought of as butterfly bodies and the crossed lines as butterfly wings. The excerpt below, from Kozaki's Fig. 6, depicts a set of four butterfly calculations. For some reason, Kozaki does not designate these with reference numerals.



Nowhere in Figure 6, or otherwise, does Kozaki teach the use of a butterfly stage such that (1) outputs from a first set of butterfly calculations are stored in shuffled order in place of the inputs for a second set of butterfly calculations, and (2) outputs from the second set of

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butterfly calculations are stored in shuffled order in place of the inputs for the first set of butterfly calculations. Yet, this is what claim 47 demands.

So where does the Office Action go astray?

That's easy. In the repeated and mistaken assumption that Kozaki's elements 4 and 6 perform butterfly calculations. They do not. They are simply memory and buffer elements, as emphasized in the following quote from column 7 of Kozaki:

The memory 4 stores data during processing. As the butterfly computation operates, the input data is overwritten by intermediate results, which in turn are overwritten by later-stage intermediate results, and these in turn are overwritten by final results so that the input data is converted to an ordered set of final results or output data. Selector 5 reads data constituting the final results from memory 4 and transfers the data (without reordering) to an output buffer 6, also referred to as the third storage means or third storage section, in synchronization with high-speed internal clock 13.

The output buffer 6 temporarily stores the data transferred by selector 5 in synchronization with the high-speed internal clock. Output buffer 6 outputs the data to a predetermined circuit (e.g., the deinterleave circuit and error correction circuit 95 in FIG. 18) in synchronization with a low-speed clock such as the low speed system clock 111 of FIG. 18. That is, the output buffer 6 makes speed adjustments between the high-speed internal clock of this apparatus and a low-speed system clock of an external apparatus.

Not only does Kozaki not teach the use of a butterfly stage such that (1) outputs from a first set of butterfly calculations are stored in shuffled order in place of the inputs for a second set of butterfly calculations, and (2) outputs from the second set of butterfly calculations are stored in shuffled order in place of the inputs for the first set of butterfly calculations; Kozaki also fails to teach the use of memory elements 4 and buffer 6 for this purpose.

Hence, the rejection over Kozaki must be withdrawn.

The secondary reference, Aguilar, does not make up for the deficiencies of Kozaki. Aguilar also fails to teach or suggest, among other things, the use of butterfly stage such that (1) outputs from a first set of butterfly calculations are stored in shuffled order in place of the

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inputs for a second set of butterfly calculations, and (2) outputs from the second set of butterfly calculations are stored in shuffled order in place of the inputs for the first set of butterfly calculations. Indeed, the Office Action does not even rely on Aguilar for this. It only mentions that publication in the context of four-fold SIMD for purposes of radix-4 calculations.

Given the shortcomings of Kozaki and the failings of Aguilar, those publications do not — singularly or together — anticipate or render obvious the subject matter of claim 47. Nor, of course, do they do so with respect to the remaining dependent claims, which depend from claim 47.

This responds in full to the Office Action mailed July 12, 2005. Claim 50, already indicated as allowable, is placed in independent form. The remaining claims are shown to be patentably distinct from the art. In view thereof, the Applicant requests that this case be passed forward to issuance.

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Respectfully Submitted,
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